

From Uncertainty to Strategy:

**Tackling Climate Transition Risks
Head-On**

April 2025

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Dear Reader,

In recent months, we have seen significant shifts in the sustainability landscape.

In February 2025, the European Commission introduced the “Omnibus Package,” proposing a major simplification of sustainability reporting and due diligence requirements for large European companies. This has sparked widespread debate, revealing contrasting views.

Some argue that the proposal represents a major setback, undermining years of progress. Others welcome it, believing that reducing compliance burdens will allow companies to focus more on sustainability initiatives that may have been sidelined.

Regardless of perspective, one fact remains unchanged—reducing reporting requirements does not eliminate climate-related risks. On the contrary, the likeliness of more climate change-related events impacting businesses should only increase preparedness from companies. Companies must still assess these risks carefully and ensure their strategies remain resilient to potential market shifts.

This document provides a practical framework to help companies identify, assess, and manage climate **transition risks** effectively. These risks—financial, operational, and strategic—arise as economies transition to a low-carbon future.

A clear understanding of these risks, coupled with a robust risk management strategy, will enable businesses to build resilience and demonstrate their ability to navigate the low-carbon transition.

We hope you find this publication valuable. We welcome your feedback and look forward to supporting you in this evolving landscape.

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April 2025
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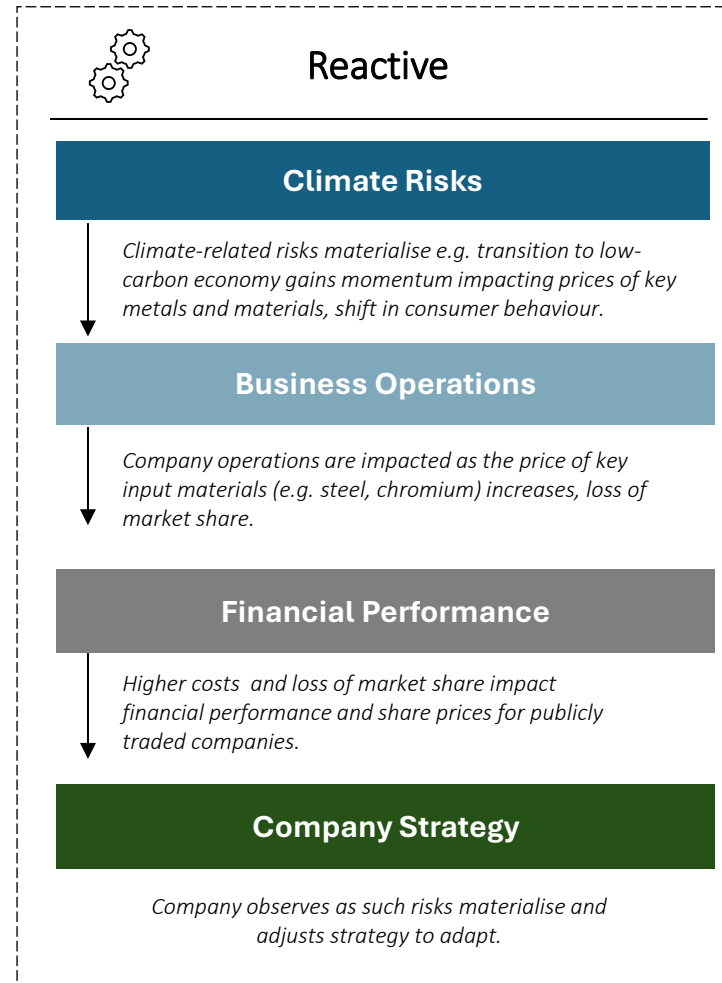
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Management of climate-related risks demonstrates strategy resilience

- Climate risk management helps companies prepare for and navigate the uncertainties and disruptions associated with a **changing climate**. For investors, climate-related disclosures are particularly important. They provide insights into how climate-related risks may impact business performance and companies' long term strategy.
- **Proactively managing climate risks enables companies to build more resilient supply chains and operations**, better positioning them to handle extreme weather events or other climate-related impacts.
- **Scenario Analysis is a powerful risk-management tool that companies can use to assess and quantify impact on business performance in selected scenarios**. Scenarios should reflect different transition pathways to a low-carbon economy.
- This document provides a high-level overview of climate-related risks, focusing primarily on transition risks—those arising from the global shift to a low-carbon economy.
- It also provides examples of how such risks can materialise and presents a concrete methodology and an **illustrative case study** of how companies can proactively assess climate risks through Scenario Analysis, demonstrating resilience to stakeholders.



Source: Enfinit

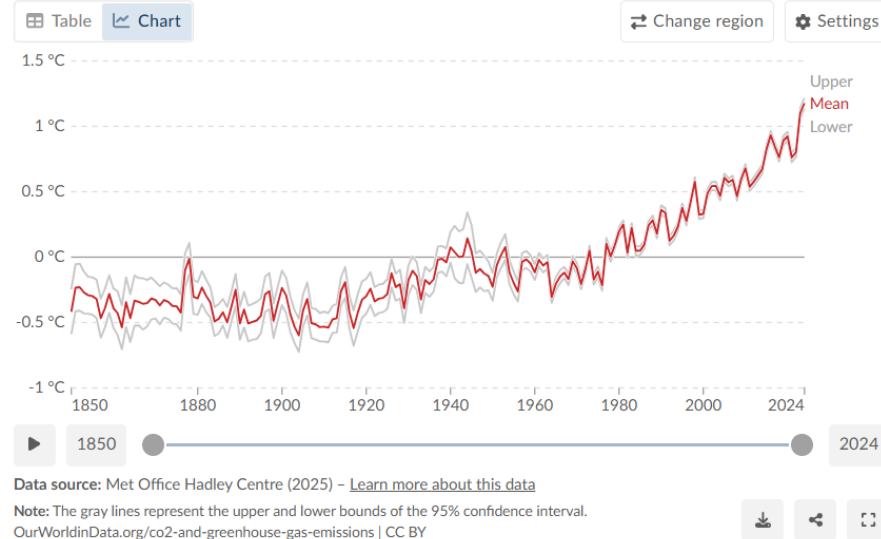
The effects of human-induced climate change are already being felt today

The rise in human-induced GHG emissions has contributed to higher temperatures

- Since the onset of industrialization, human activities have released approximately **2,300 billion tonnes of CO₂** into the atmosphere. Consequently, global average temperatures **have risen by about 1.2°C** compared to pre-industrial levels.
- Over the past 50 years, the occurrence of natural disasters—including extreme heat, floods, droughts, storms, and wildfires—**has increased fivefold**.

Average temperature anomaly, Global

Global average land-sea temperature anomaly relative to the 1961-1990 average temperature baseline.

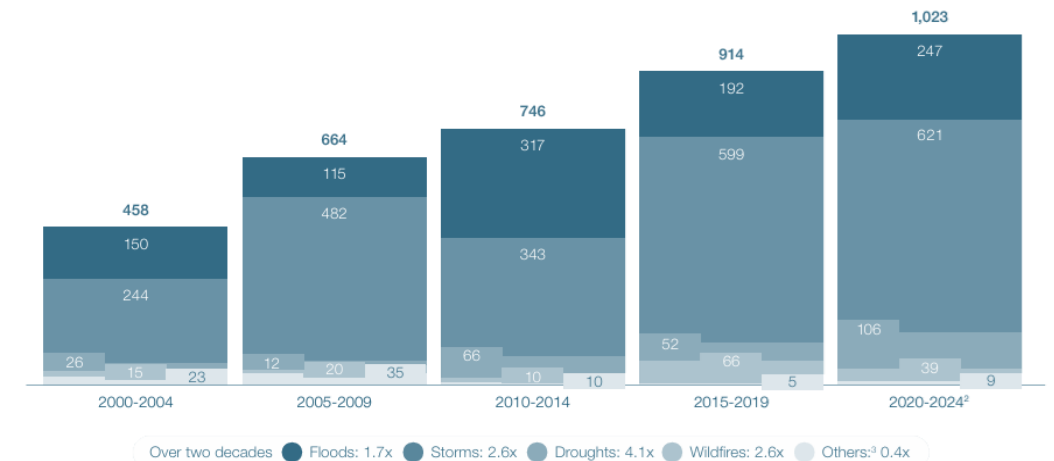


Climate change is already causing significant economic costs

- Climate risks are no longer distant threats – they are materializing today, with impacts already felt across industries and regions. **Climate-related disasters have caused more than \$3.6 trillion** in economic damage since 2000, more than half of which is attributed to storms.
- **Insurance premiums** for climate resilience and protection from “natural catastrophes” are estimated to **increase by around 50%** until 2030, reaching a total of \$200 billion to \$250 billion.

Economic cost of climate-related disasters¹

(\$ billion) five-year sum of reported cost of disasters from 2000-2024²



Source: Cost of Inaction, WEF, 2024

Regulatory frameworks aim to increase transparency on climate accountability

- Several frameworks and regulations have been introduced to enhance corporate accountability on **climate impact**.
- For example, in 2015 the **Task Force on Climate-related Financial Disclosures (TCFD)** (now under ISSB)* established guidelines for disclosing climate-related risks and opportunities.
- In 2023, the **EU's Corporate Sustainability Reporting Directive (CSRD)** set new standards for corporate sustainability reporting, which includes climate as well as other environmental, social and governance topics. To ensure that such rules are appropriately reflected in the financial markets, the EU introduced regulations that cover financial market participants outlined in **Sustainable Finance Disclosure Regulation (SFDR)**. Lastly, as a bridge between the two, the EU outlined a detailed **Taxonomy** which provides a list of sustainable economic activities, categorised into six environmental objectives.
- In February 2025, as a result of increasing pushback by member states on the administrative burden, the European Commission took a step back by proposing the so-called "Omnibus" legislation aimed at simplifying disclosure rules and reducing regulatory burden on businesses.

*(ISSB) International Sustainability Standards Board

CSRD Corporate Sustainability Reporting Directives



Objective: standardises sustainability reporting, defines disclosure requirements on sustainability-related risks and opportunity including climate change, pollution, water and marine resources, biodiversity and ecosystems, resource use and circular economy.

Scope: Large companies as defined by the EU that meet at least two of the following criteria:

- €50 million in net turnover > €25 million in assets > 250 employees.*

*Omnibus revised to > 1000 employees and €50 million in net turnover.

**The Omnibus proposal envisages voluntary Taxonomy reporting

EU Taxonomy*

The EU Taxonomy is a common system for determining whether an economic activity qualifies as environmentally sustainable.

CSRD requires companies to report on the proportions of Revenues, Capex and Opex, which are "taxonomy eligible" and "taxonomy aligned"***

Financial institutions can compare companies' sustainability credentials based on "taxonomy aligned"

SFDR Sustainable Finance Disclosure Regulation



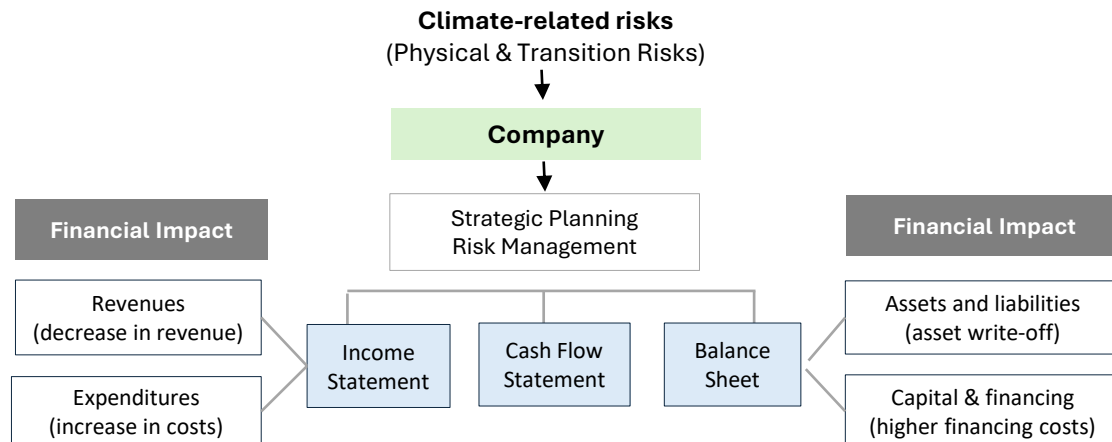
Objective: Introduces disclosure requirements for financial market participants and financial advisors on sustainability risks related to investment decisions.

Scope: Financial Market Participants and Financial Advisors in the EU and non-EU actors (if financial products are marketed or managed in the EU) covering:

- Products with environmental or social characteristics – "light green products" (Article 8, SFDR)
- Products with a sustainable investment objective contributing to an environmental or social objective – dark green products (Art 9. SFDR).

Climate-related risks may impact financial performance and business strategy

- Climate-related risks can manifest as a direct impact on physical assets due to weather events (**Physical Risks**) or as a result of the global transition to a low-carbon economy (**Transition Risks**).
- These risks may affect companies across multiple dimensions (strategic, operational, reputational, and financial), along the entire value chain, across regions, and over long periods of time.
- One of the requirements of CSRD and TCFD is that companies disclose the extent that such Physical and Transition risks can potentially impact their business model, strategy and financial performance. As a result, companies should assess the impact of climate-related risks and demonstrate that their strategy is **resilient** to such risks.
- Such disclosures are subsequently used by financial institutions and investors to assess their exposure to long-term climate-related risks. This is also known as “financial materiality”.



Physical Risks

The physical impacts of climate change can put companies’ operations, infrastructure and supply chains at risk. For example, changes in water availability, food security, extreme temperature changes affecting organizations’ premises, operations, transport needs etc.



Acute - event-driven climate risks, including increased severity of extreme weather events, such as cyclones, hurricanes, or floods.



Chronic - longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves, among other consequences.

Transition Risks



Market - changes in primary energy demand due to low-carbon transition pathways. For example, rising costs of raw materials or low-carbon materials.



Policy & Legal - potential impact of carbon disclosure mandates and regulations. For example, product-related regulations such as carbon taxes, litigation risks.



Technology - Innovation, development and implementation of new low-carbon technologies by competitors. For example, substituting existing carbon-intensive products and services for low carbon ones, such as electric vehicles and renewable energy.



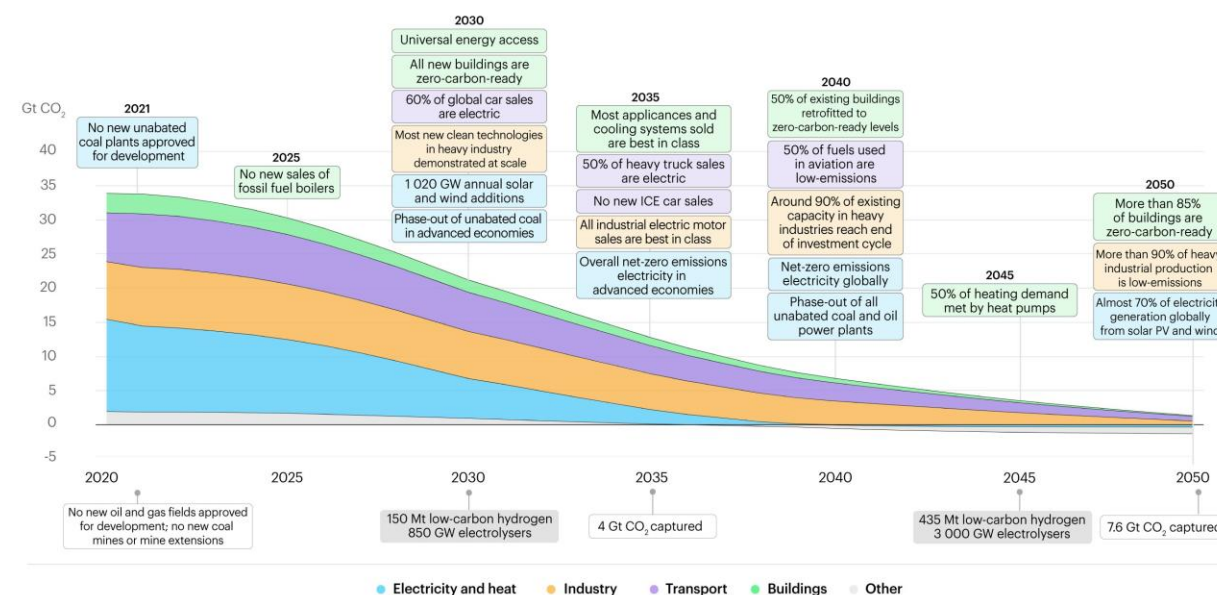
Reputation - changes in the behaviour and preferences of stakeholders, non-compliance with reporting requirements etc.

Achieving net zero emission by 2050 will require a complete transformation of the global energy system

Limiting the rise of global temperatures to 1.5 °C requires a complete transformation of the energy system. The International Energy Agency (IEA) published its net zero pathway which lays out the key pillars and technologies needed to achieve such a transformation:

- **Decarbonisation will require massive deployment of all available clean energy technologies.** Almost 90% of global electricity generation in 2050 comes from renewable sources, with solar PV and wind together accounting for nearly 70%.
- **Electrification becomes the core of the energy system.** Electricity will play a key role across all sectors, from transport and buildings to industry. This will require huge increases in electricity system flexibility – such as batteries, demand response, hydrogen-based fuels, hydropower and more – to ensure reliable supplies.
- **Transformation requires deployment of existing and novel technologies.** Most of the reductions in CO₂ emissions through 2030 come from technologies already on the market today. But in 2050, almost half the reductions come from technologies that are currently at the demonstration or prototype phase.
- **A significant decline in the use of coal, oil and gas.** This requires steps such as halting sales of new internal combustion engine passenger cars by 2035 and phasing out all unabated coal and oil power plants by 2040.
- A number of policies are needed to incentivise such a decarbonisation (example: carbon pricing).

Net-zero by 2050 pathway – International Energy Agency



Source: IEA, NetZero Pathway, 2021

- Such a transformation can have a significant impact on the global economy and consequently on industries and financial performance of individual companies. In the next pages we will present a selection of potential **transition market drivers** and explain how they can impact company performance.

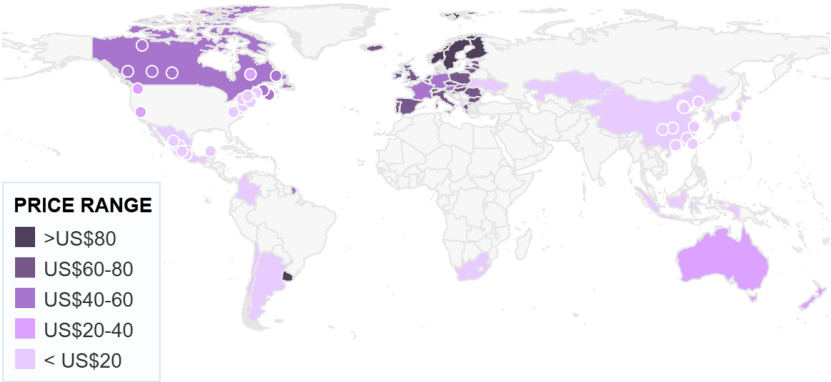
Carbon pricing alone has the potential to impact EBITDA by up to 50%

Carbon pricing is a key instrument in driving decarbonisation

- Carbon pricing is key to accelerating the low carbon transition.
- Carbon pricing mechanisms have expanded steadily and currently cover around a quarter of global emissions. By 2030, ETS (Emission Trading Scheme) I & II are expected to cover nearly all emissions in Europe with prices reaching \$90 to \$150/tCO2e.
- To meet “well below 2°C” goals, both coverage and price levels would need to rise further.

Price of carbon around the world, 2024

Heat map shows the level of the main price set by emissions trading sytems or Carbon taxes in each jurisdiction (US\$/tCO2e)



Source: Carbon Pricing Dashboard, World Bank

Energy-intensive firms that don’t decarbonize risk rising transition costs

- A recent study by WEF assesses that annual financial impact of carbon pricing by 2030 could be significant.
- In particular, fossil-fuel utilities and energy-intensive sectors such as materials, metals and chemicals that do not decarbonize, could risk significant cost increases (potentially up to a level equivalent to 50% of their EBITDA by 2030).
- Level of impact depends on the pace of transition.

Average annual financial impact of carbon pricing by 2030, by scenario
% annual EBITDA at risk

	Rapid transition						Slow transition					
	Materials	Metal & mining	Chemicals	Utilities	Industrials	Oil & gas	Materials	Metal & mining	Chemicals	Utilities	Industrials	Oil & gas
Europe	>50%	20-30%	20-30%	10-20%	5-10%	5-10%	>50%	20-30%	10-20%	10-20%	1-5%	<1%
North America	30-50%	30-50%	20-30%	30-50%	5-10%	5-10%	1-5%	1-5%	1-5%	1-5%	<1%	<1%
South America	>50%	20-30%	10-20%	5-10%	5-10%	5-10%	1-5%	<1%	<1%	<1%	<1%	<1%
Asia-Pacific	>50%	30-50%	10-20%	30-50%	1-5%	5-10%	20-30%	1-5%	1-5%	1-5%	<1%	1-5%
Africa & Middle East	>50%	30-50%	>50%	>50%	5-10%	1-5%	<1%	<1%	<1%	<1%	<1%	<1%
Sector average	>50%	30-50%	30-50%	30-50%	5-10%	5-10%	20-30%	5-10%	1-5%	1-5%	<1%	<1%

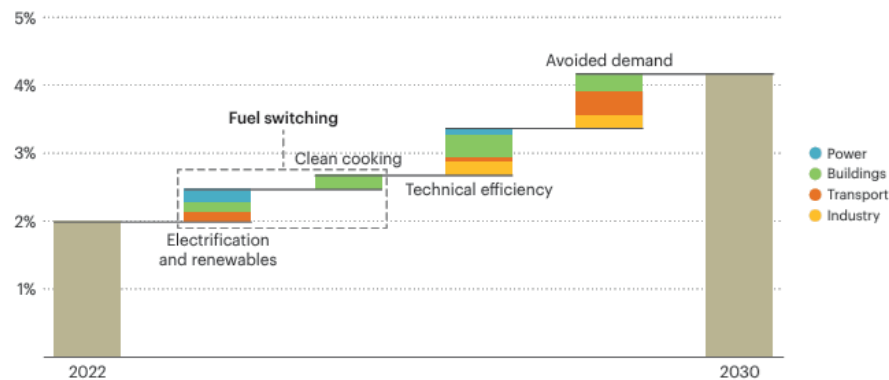
Source: Cost of Inaction, WEF, 2024

Reducing carbon emissions depends on reducing energy intensity across all sectors of the economy

Energy intensity is expected to decrease due to scaling of efficient solutions, fuel switching and behavioural change

- **Fuel switching:** A shift to more efficient fuels through electrification and renewables. For example, switch to EVs, use of electricity in industry such as electric furnaces for steel production, or use of heat pumps for heating in buildings.
- **Technical efficiency:** Improved efficiency in design. For example, improved energy consumption of appliances (refrigerators purchased today consume less than half as much electricity as models sold 20 years ago).
- **Avoided energy demand.** Energy consumption avoided due to behaviour change. For example, adjusting space heating and cooling temperatures, more public transport and reduced car use in cities.

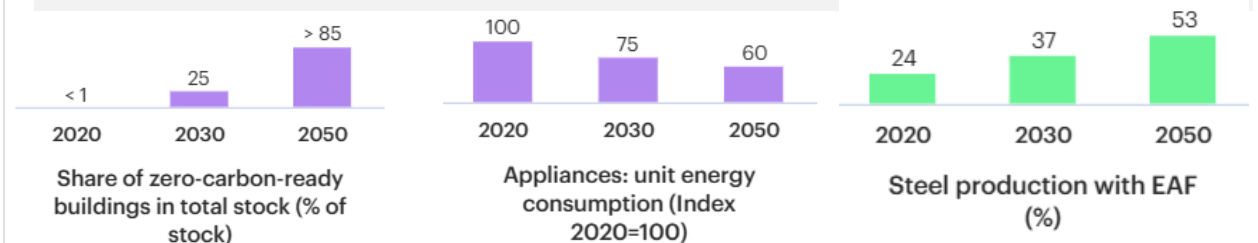
Average annual rate of total energy intensity reduction by contributor



Source: IEA, Net Zero Roadmap A Global Pathway to Keep the 1.5°C Goal in Reach, 2023 Update

To remain competitive, companies need to adjust their business models and foster innovation in processes and products

- Decarbonisation demands a strong shift to efficient buildings with the share of zero-carbon ready buildings representing more than 84% of the building stock by 2050. In the meantime, the average energy usage of appliances would decrease by 40% in 2050. Steel production with Electric Arc Furnaces (EAF) would double in 2050.
- Such trends would have significant implications for various sectors of the economy. For example:
 - Real estate companies need to retrofit their building portfolios as more stringent regulations are imposed on energy performance. Home owners and tenants also use labelling schemes to select low-energy buildings.
 - Industrial companies will need to innovate and develop efficient products or lose market share to competitors who better cater to such needs.
- Companies that are able to innovate and demonstrate long-term cost savings over their lifecycle will have the advantage.



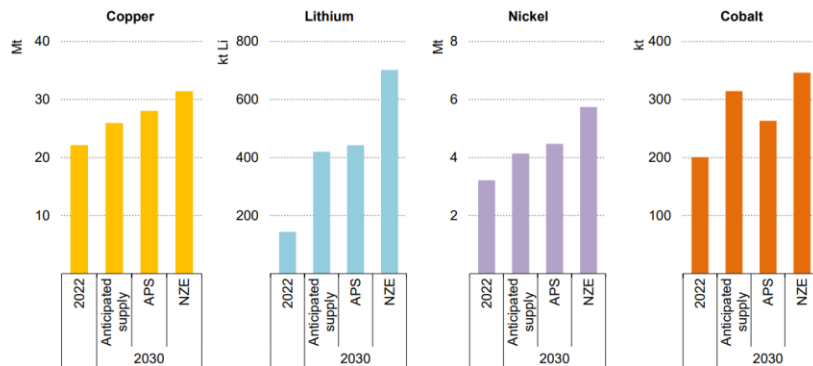
Source: IEA, Net Zero by 2050

The energy transition requires substantial amount of critical materials

Energy transition in line with the 1.5°C pathway can substantially raise demand for certain minerals and metals

- Large quantities of critical minerals are required for clean energy technologies and their supporting infrastructure, ranging from wind turbines and EV batteries to and power grids.
- Critical minerals for clean energy technologies typically include chromium, cobalt, copper, graphite, lithium, manganese, molybdenum, nickel, platinum group metals, zinc, rare earth elements and other commodities.
- According to IEA, demand for critical minerals for clean energy applications quadruples between 2022 and 2030 in the NetZero Scenario (NZE). Electric vehicles (EVs) and battery storage are the main drivers of demand growth. Demand for other minerals and metals will grow such as aluminium, indium, iron, lead, manganese, molybdenum, titanium, vanadium and zinc.

Anticipated primary production and primary supply requirements of selected minerals in the APS and NZE Scenario



APS (Announced Pledges Scenario) - APS considers all public climate pledges and targets announced by governments, even if they are not yet fully backed by specific measures or legislation.

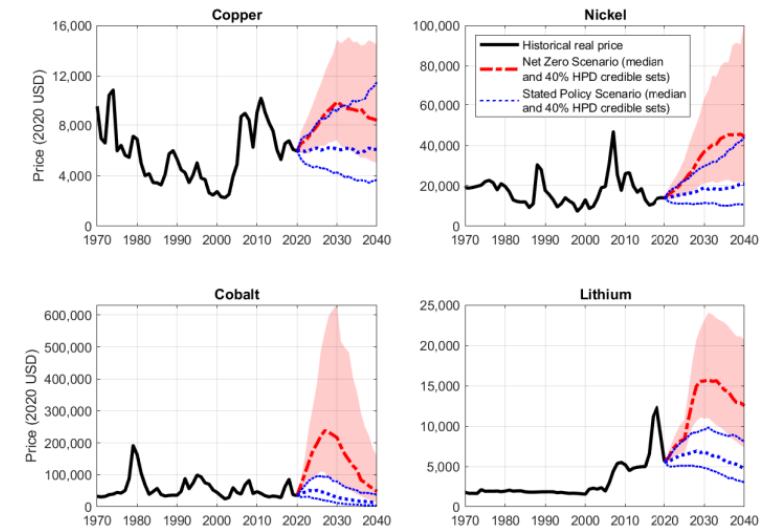
NZE (Net Zero Emissions Scenario) - NZE lays out a detailed pathway for the global energy system to achieve net-zero greenhouse gas emissions by 2050

Source: IEA Critical Minerals Market Review 2023.

Companies that depend on such input metals may be exposed to higher production costs

- An increase in demand may lead to supply bottlenecks, potentially driving up the price of these inputs. An IMF working paper assesses the price impact of the energy transition on four key metals—**copper, nickel, cobalt, and lithium**—and finds that, under the Net-Zero Emissions Scenario, prices could **increase by several hundred percent** compared to their 2020 annual average levels.
- Companies may also need to increase innovation to avoid or minimise use of critical materials needs. Inability to manage supply of input materials may result in a transition risk.

Price scenarios for the stated policy scenario and the net-zero emissions scenario



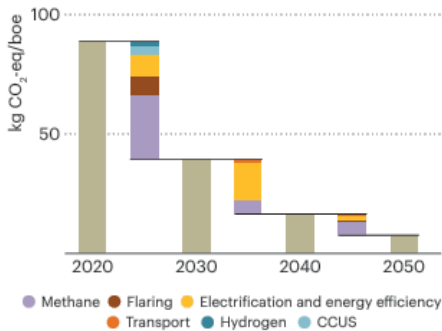
Source: IMF Working Paper, Energy Transition Metals, 2021

Companies face risk of write-downs of up to 30% on their grey assets

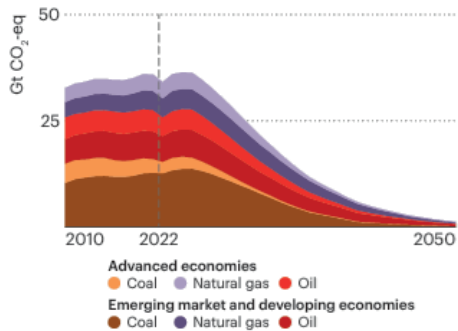
As the low-carbon transition accelerates, demand for fossil fuels and related products will start to decline

- The IEA’s Net Zero pathway projects a steep decline in fossil fuel demand, eliminating the need for new long lead-time upstream oil and gas projects, as well as new coal mines or mine extensions.
- Additionally, electricity generation from unabated fossil fuels is expected to decrease by 40% by 2030 and nearly disappear by 2050. This transition will be driven by reduced plant utilization, retirements, retrofitting with carbon capture, utilization, and storage (CCUS), or repurposing for low-emission fuel use.

The emissions intensity of global oil and gas operations falls by more than 50% to 2030



Fossil fuel GHG emissions fall by 97% to 2050; nearly 80% of fossil fuel demand in 2050 is for non-combustion applications or used with CCUS



Source: IEA, Net Zero Roadmap A Global Pathway to Keep the 1.5C Goal in Reach 2023 Update

Stricter climate regulations could significantly increase the risk of premature write-downs, leading to stranded assets.

- As a result, some companies may be forced to devalue their assets sooner than anticipated due to climate-related impacts.
- Some firms may underestimate the financial implications of such a transition, particularly for long-lifetime assets.
- In a scenario of rapid decarbonization, these write-downs could amount to as much as 30% of stock value, posing a substantial financial risk.

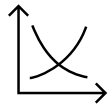
Asset write-downs on grey assets by 2030 (% of 2030 stock value)

	Upstream oil fields ¹	Coal plants ¹	Blast furnaces ¹	Heavy fuel vessels ²	Steam crackers ³
Slow transition	0%	0%	-3%	0%	0%
Medium-paced transition	-20%	-2%	-5%	-5%	-5%
Rapid transition	-35%	-20%	-15%	-10%	-10%

Source: Cost of Inaction, WEF, 2024

A low-carbon economy also presents numerous opportunities

Whilst most literature on scenario analysis and financial materiality focuses on risk management, we should not forget that a low-carbon transition can also bring forth significant opportunities especially for companies that take a long term view of managing such risks and identifying concrete mitigating actions. Below we highlight some of the areas of potential opportunities.



Market - opportunities arising due to shift to low-carbon economy

A low-carbon transition may open up new markets such as:

- Shift to new markets such as new modes of transportation (EVs)
- Introduction of novel business models such as Energy-as-a-Service (EaaS)
- Introduction of novel sustainability linked financing instruments
- Diversification of revenues by exploring new emerging markets
- Collaboration with innovative start-ups tackling specific climate topics



Resource efficiency - less energy and water intensive processes

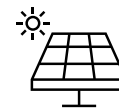
- Companies have the opportunity to implement measures that result in lowering their energy and water intensity in their processes (e.g. implementing projects that use innovative products)
- This in turn will result in cost reduction by improving efficiency across their production and distribution processes, buildings, machinery/appliances, and transport/mobility.



Product innovation - circular economy and innovation

Companies have the opportunity to develop new low-emission products and services and improve their competitive position in the market.

- Consumer goods and services that place greater emphasis on a product's carbon footprint.
- Producer goods that place emphasis on reducing emissions (e.g. developing efficient heating, industrial technology, sustainable building materials etc).



Energy sources - use of renewable energy for own use

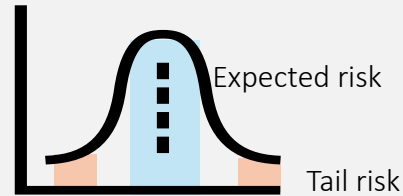
- Companies can utilise decentralised clean energy sources such as solar PV for their power needs, geothermal and solar thermal for heating, hydrogen (fuel switch) for industrial processes, storage solutions, low carbon transportation, electrification of own fleet, efficiency in buildings etc.
- This can help companies secure alternative energy sources and thereby hedge against price and supply risks for their own operations.

The use of Scenario Analysis as a tool to assess climate-related risks

The extent of impact that transition risks can have on a company varies according to its location, operations, geography and the industry it operates in. For example, a real estate company faces a different set of risks compared to an agriculture based company. In this section, we highlight key aspects and steps of assessing climate-related risks through the use of Scenario Analysis and Impact Modelling.

Scenario Analysis is used in risk management to “stress test” possible future outcomes

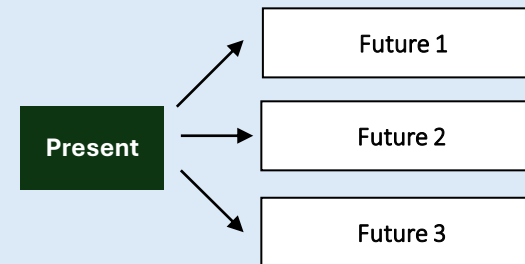
- A scenario describes a plausible, but hypothetical, path of development leading to a particular future outcome.
- Scenarios are not forecasts or predictions - they are “what-if” narratives designed to inform and challenge strategic thinking.
- As such, the analysis allows a company to understand the risks and uncertainties it may face under different hypothetical futures and how those conditions may affect its performance.
- Scenario analysis can identify **key drivers of change** and **pathways of development** that a company can monitor to understand which outcomes are emerging and allow for “midcourse corrections.”
- It contributes to greater **strategy resilience** and flexibility by:
 - testing a strategy and its options against a set of scenarios;
 - identifying possible future threats or opportunities;
 - identifying trigger points to set contingency plans in motion; and
 - serving as a basis for continuous monitoring and strategy adjustment.



Companies typically use exploratory scenarios to stress test their exposure to identified risks

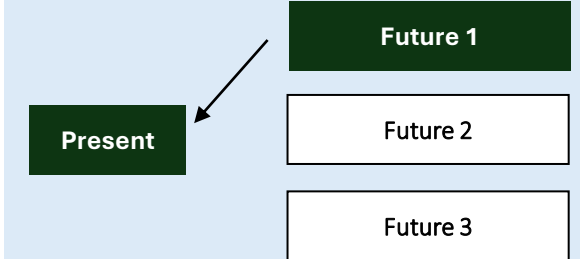
- There are two types of scenario analysis: Exploratory and Normative.
- **Exploratory scenarios** describe a diverse set of plausible future states and test the resiliency of various strategies to a wide range of future conditions.
- **Normative scenarios**, set a preferred or desired future outcome and then back-tracks plausible pathways from the preferred future to the present to inform decisions on what is needed to achieve (Example: Net Zero Transition Pathways).

Exploratory Scenarios



Different pathways leading to different plausible futures

Normative Scenarios

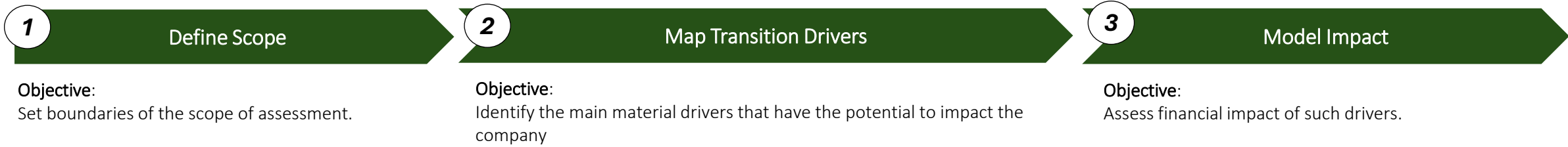


Reaching a targeted future by back-casting to understand the pathways.

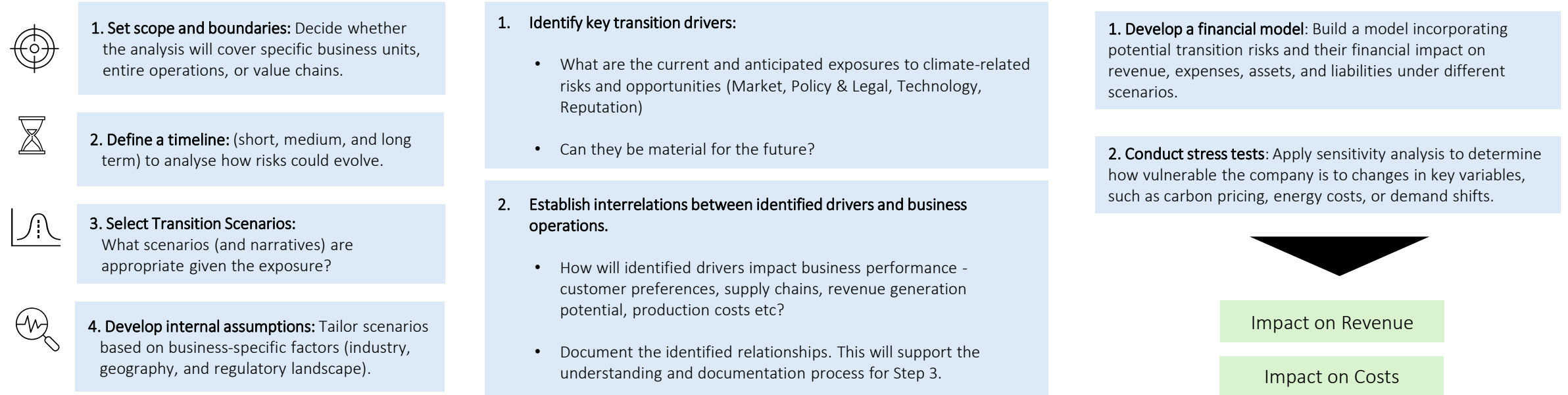
Source: TCFD

Scenario analysis is typically undertaken along three main steps

The overall objective of a Scenario Analysis is to assess the impact of climate-related risks on the performance of a company. The assessment process has three main steps, each with its distinct objective as outlined below.



Risks/Opportunities



IEA develops various transition scenarios varying in speed of decarbonisation

- In the first phase of Scenario Analysis, companies select the exploratory transition scenarios that they wish to assess.
- For transition risks, companies are typically guided to use **International Energy Agency (IEA)**'s scenarios, which explore different pathways for the global energy system based on varying assumptions about policies, technologies, and societal choices.
- Three main Scenarios which are most widely used are presented below.



1. Stated Policies Scenario (STEPS)

STEPS reflects the current policy environment, including only those policies and measures already in place or under development. This is essentially a "business-as-usual" scenario based on today's commitments.

Global Temperature: ~2.5-3 °C by 2100

Key Features:

- Accounts for existing regulations, targets, and announced policies.
- Excludes assumptions about future policy changes.
- Highlights the gap between current actions and long-term sustainability goals.

Implications:

- Slower progress on decarbonization.
- Energy demand continues to grow, relying heavily on fossil fuels.
- Limited alignment with global climate goals, resulting in higher emissions.

2. Announced Pledges Scenario (APS)

APS considers all public climate pledges and targets announced by governments, even if they are not yet fully backed by specific measures or legislation. This scenario explores the pathway toward meeting these pledges in full and on time.

Global Temperature: ~2 °C by 2100

Key Features:

- Assumes successful implementation of Nationally Determined Contributions (NDCs) under the Paris Agreement.
- Includes net-zero targets, renewable energy commitments, and other policy ambitions.
- Represents a significant step forward from STEPS but does not guarantee limiting global warming to 1.5 °C.

Implications:

- Accelerated deployment of clean energy technologies.
- Decreased reliance on fossil fuels, with a significant increase in renewable energy.
- Moderated temperature rise, though not sufficient to meet the most stringent climate goals.

3. Net Zero Emissions by 2050 Scenario (NZE)

NZE lays out a detailed pathway for the global energy system to achieve net-zero greenhouse gas emissions by 2050. It is aligned with the goal of limiting global warming to 1.5 °C with no or limited overshoot.

Global Temperature: ~1.5 °C by 2100

Key Features:

- Requires immediate and profound transformations in all aspects of energy production and consumption.
- Assumes a sharp reduction in fossil fuel use, massive expansion of renewable energy, electrification of transport and industry, and advancements in carbon capture and storage (CCS).
- Encourages strong behavioral and structural changes, alongside unprecedented international cooperation.

Implications:

- A highly sustainable and resilient energy system.
- Net-zero emissions achieved by 2050, with significant co-benefits like improved air quality.
- Requires global investments in clean energy to triple by 2030 compared to 2020 levels.

Several methodologies for measuring impact of climate-related risks are available

- The last step of Scenario Analysis assesses the potential financial impact of selected transition drivers on a company's financial performance.
- There are various methodologies and tools available to measure such impact. Companies should make a number of considerations before embarking on such assessments as the preferred methodology and output highly depends on each company's needs.

Climate-risk modelling differs from conventional corporate risk assessment

- Conventional risk assessment methods primarily rely on static or historical data, often assuming a normal probability distribution for events or shock outcomes. In contrast, climate modelling differs from transition risk assessment by focusing on future hypothetical scenarios, meaning it cannot be guided by past data.
- They are also either bottom-up, which builds the economic impacts up from the firm level, or top-down, which directly models economic impacts at the macroeconomic or sector level.
- Bottom-up methodologies offer a more granular assessment and provide more detailed information at the firm level and through the supply chain.
- There are many “off the shelf” tools available in the market, though they tend to be tailored to investors with the goal of assessing investment portfolios. As such, they can sometimes be a “black box” – i.e. the end user cannot always clearly see the architecture, underlying assumptions and the mechanics behind the results generated.

The output of such modelling exercises varies significantly depending on end user requirements

Impact assessments typically look at the following three aspects:

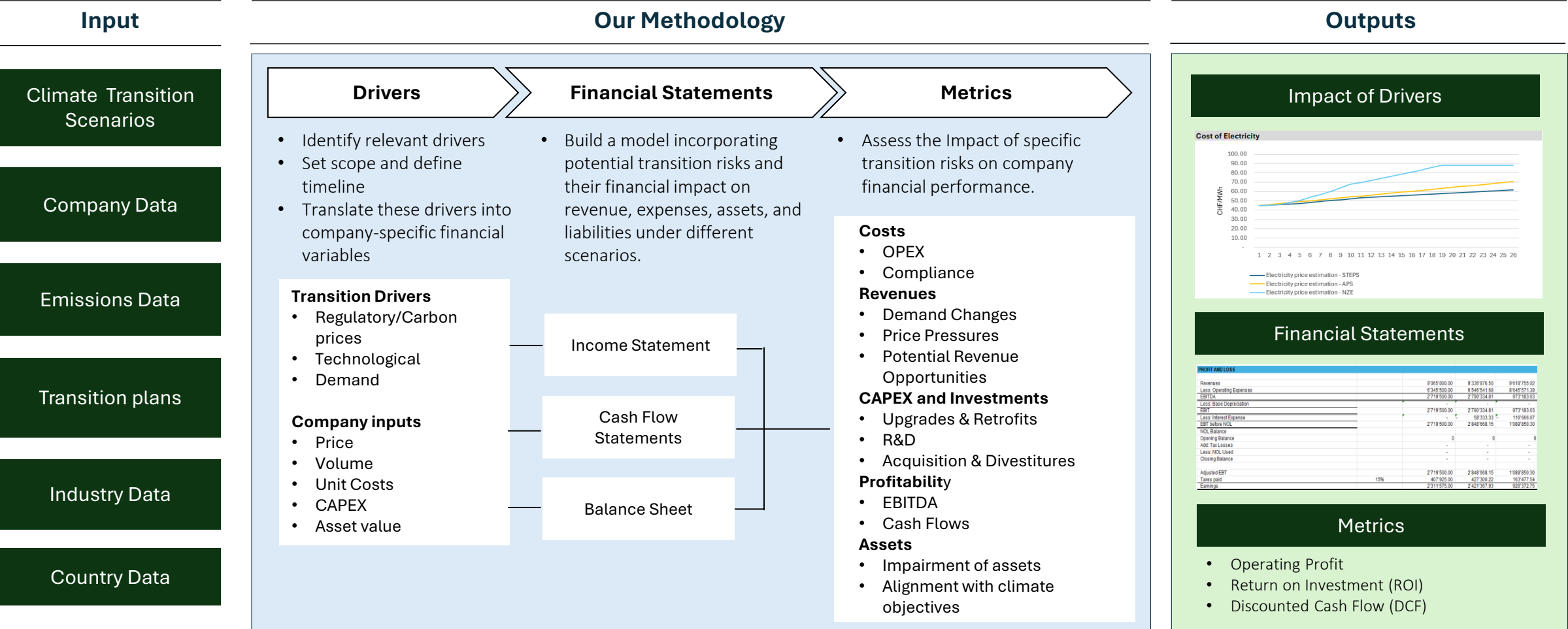
- Exposure** - determined by location and sector, and exposure to climate policy or technology, respectively.
- Sensitivity** - company's emission intensity per unit of production and therefore how far it will be affected by a change in costs, or in supply chain terms, by a supplier's emissions intensity.
- Adaptive capacity** - company's ability to shift away from high emissions technology or suppliers (input substitution), or to develop new technologies or business models through R&D and strategy respectively.

Outputs vary depending on the objective. Some examples are provided below:

- **Alignment gap** – how aligned is a portfolio with 2°C Scenario.
- **Risk Score** – assigns a designated score to companies depending on exposure
- **Financial Metric** - such as Climate VaR or (Variance at Risk), typically used for public equities
- **Balance sheet effect** - impact on EBITDA , typically used by companies in “bottom up” assessments.
- **Impairment Testing for Assets**: Assess the possibility of “stranded assets” and changes in useful life of assets.

Enfinit's methodology assesses impact of transition risks on EBITDA or Cash Flow

- At Enfinit, we use a 'bottom-up' approach to assess how transition risks can impact companies' operations.
- Below we present our methodology for undertaking such an assessment and its outputs - financial impact on companies' performance.



Illustrative Case Study



Illustrative Case Study: Measuring impact of transition risk for an industrial company

- To illustrate the proposed methodology, we present a simplified illustrative case of a company operating in Europe that produces industrial machinery.
- The scope of assessment includes **2 products** manufactured in two countries:
 - Machine 1 - produced in Country 1 (high emission country)
 - Machine 2 - produced in Country 2 (low emission country)
- Machine 1 has a much higher (double) emission intensity (CO2/Revenue)
- The company uses mainly **steel** and **electricity** as key inputs, with steel being further processed in its manufacturing plants.
- The company is not currently subject to any ETS rules for carbon related emissions, but may be impacted in the future. It has been considering investing in a **CCU (Carbon Capture and Utilisation)** project to reduce product emission factor and mitigate any potential regulatory risks for carbon emissions. This project is embedded in the fourth scenario presented below (Net Zero Emissions + Mitigation).
- Key elements of the assessment process are presented below.



1

Define Scope

Scope:

- 2 factories
- 2 products

Scenarios:

Four (4) IEA Scenarios were selected:

- Stated Policies Scenario (STEPS)
- Announced Pledges Scenario (APS)
- Net Zero Emissions by 2050 Scenario (NZE)
- NZE + Mitigation (CCU)

2

Map Transition Drivers

Two transition drivers are considered material:

- :Exposure to carbon pricing and materials with high embedded emissions.
- Shift in customer demand for low-emission machinery or energy-efficient products.

Four (4) quantifiable elements were identified:

- Risk that the company will be subject to **carbon prices**.
- Risk that price of **steel** will increase due to decarbonization efforts.
- Risk that **electricity prices** will increase due to decarbonisation efforts.
- Risk that the company will **lose market share** due to shift in preference for more efficient products.

3

Model Impact

- Company built a **bottom-up model** to assess product-level impacts, such as cost increases or shifts in demand.
- Discounted Cash Flow (DCF)** models were used to evaluate the financial impact of transition risks under different IEA scenarios.



Step 2 establishes a detailed understanding of the key drivers and sets assumptions that are used for impact modelling

Transition Drivers

- Firstly, the company should identify the most material transition drivers and map out the potential impact of such drivers. This should be done in collaboration with relevant business units and stakeholders.
- For example, if potential shift in customer demand for low-emission products is outlined as a potential risk, then sufficient information should be gathered, such as:
 - Does the company have any data on a potential customer preference shift? Or is there market data available to support such a trend?
 - Are competitors putting efforts in R&D for such product design improvements?
 - Are there any regulatory changes that may impact a faster shift?
 - What are the CAPEX plans for any product improvements?
 - What are the impacts on such drivers on revenues, costs?
- This would allow for a detailed understanding of emerging trends and their impact on various segments of the company.

Assumptions

- Once drivers are mapped out, a set of assumptions are adopted and documented, which are then used to undertake the impact modelling assessment.
- As with any modelling exercise, assumptions are moving variables which are monitored and adjusted at various points in time.
- In the table (right) we present a sample list of illustrative assumptions pertaining to the Case Study.

Illustrative Case: Main Assumptions for 4 Scenarios

	Scenarios	1.STEPS	2.APS	3.NZE	4.NZE + Mitigation**
Shift in Demand (loss of market share %)	Machine 1 (high emissions factor)	No impact - BAU	Loss in revenue due to shift in demand. (0-14%)	Significant loss in revenue due to shift in demand (10%-30%)	No impact – due to mitigation action. Possible revenue increase - improved PCF and efficiency?
	Machine 2 (low emission factor)	No impact – BAU	Loss in revenue due to shift in demand. (0-14%)	Significant loss in revenue due to shift in demand (10-20%)	No impact – due to mitigation action. Possible revenue increase due to improved PCF and efficiency?
Carbon Emissions	CO2 price	No impact – BAU	EUR 50 – 150 /ton	EUR 50 – 230 /ton	EUR 50 – 230 /ton
	Emissions	No impact - BAU	Lower emissions due to decrease in demand	Even lower emissions due to decrease in demand	Emissions halved due to CCU project
Input Costs (Steel)	Steel price	EUR 600 + inflation	EUR 600 – EUR 950- by 2050	EUR 600 – EUR 1053 - by 2050	EUR 600 – EUR 1053 - by 2050
Input Costs (Electricity)	Price	EUR 45/MWh	EUR 70/MWh	EUR 88/MWh	EUR 88/MWh
CAPEX	Investments	Minimum – BAU EUR 1.5 million	Some incremental investment EUR 8 million	Some incremental investment EUR 8 million	EUR 35 million /CCU

*All assumptions are illustrative

** As a mitigation measure, the company plans to implement a CCU (Carbon Capture and Storage) project, which allows them to capture CO2 and use it for internal purposes

PCF – Product Carbon Footprint

Illustrative Case Study



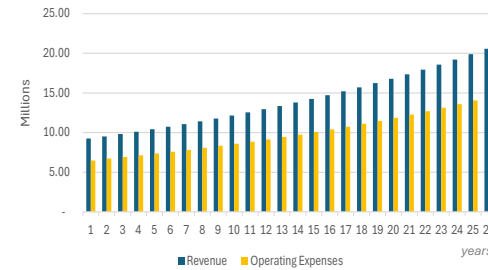
Impact modelling assesses impact of selected assumptions on company financials

Base Case Company Financials

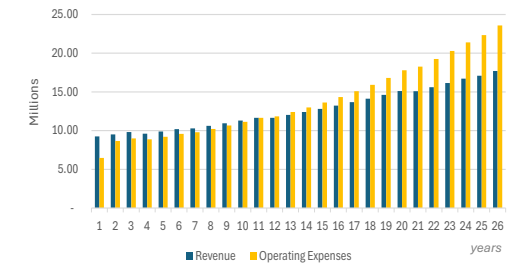
- Assumptions for each scenario outlined in the previous step are incorporated into the impact model and linked with company operational data (production, costs).
- CAPEX assumptions for any mitigation measures are also estimated. In our example such assumptions are integrated in Scenario 4 (Net Zero + Mitigation).
- Financial impact of each scenario is assessed against company financials: Revenue, Cost, EBITDA, CashFlow (depending on the selected metrics).
- In our illustrative case, the assessment shows that both APS and NZE could lead to potential losses if risks are not mitigated, with NZE having significant impact (NPV Impact on EBITDA).
- Scenario 4, on the other hand, which anticipates a mitigation action in the form of a CCU project, leads to a positive outcome. This is achieved due to lower costs related to carbon emissions costs as CO₂ is captured and utilised for internal processes.

Revenues and Operating Costs (Million EUR)

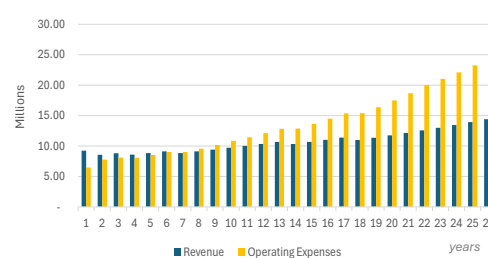
Scenario 1 – State Policies Scenario (STEPS)



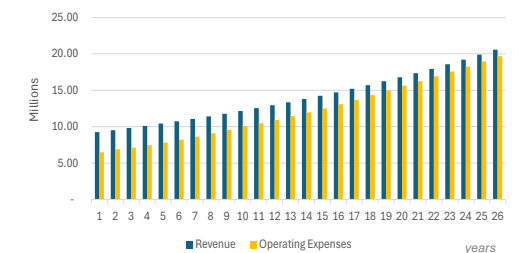
Scenario 2 – Announced Pledges Scenario (APS)



Scenario 3 – Net-Zero Energy (NZE)



Scenario 4 – Net Zero Energy + Mitigation



Key Metrics	Scenario 1 STEPS	Scenario 2 APS	Scenario 3 NZE	Scenario 4 NZE + Mitigation
Loss of Revenues NPV	0.00	-370'821.67	-1'785'498.98	0.00
Additional Costs - CO ₂ NPV	0.00	-33'256'250.63	-35'246'305.91	-5'224'521.58
Additional electricity costs NPV	0.00	-2'699'992.59	-7'761'790.56	-3'880'895.28
Additional steel costs NPV	0.00	-1'400'082.45	-2'674'732.47	-2'674'732.47
NPV – Impact on EBITDA	39'007'192.57	-1'134'071.74	-14'318'045.64	27'227'043.24

Companies should take into consideration several key challenges regarding climate-risk assessment

External factors

Data Availability and Quality

- Accessing high-quality, detailed data on emissions, energy use, and supply chain impacts can be difficult.
- Future climate policies and market trends are uncertain, complicating modelling
- Varying frameworks (e.g., TCFD, CSRD, or EU Taxonomy) can make data gathering and reporting challenging.

Complexity Modelling

- Selecting or designing relevant scenarios, such as those aligned with IPCC pathways or net-zero targets can be complex.
- Transition risks depend on factors like technology advancements, policy changes, and market trends that can evolve unpredictably.
- Transition impacts often span multiple sectors, requiring sophisticated models to capture cascading effects.

Regulatory and Policy Uncertainty

- Uncertainty about the speed and scope of government actions (e.g., carbon taxes, subsidies, or bans on fossil fuels) creates challenges in accurately assessing risks.
- Policies vary significantly across regions, affecting multinational companies' risk assessments.

Internal factors

Financial and Resource Constraints

- Comprehensive assessments require investment in tools, expertise, and technology, which may be prohibitive for smaller firms.
- Climate risk assessment is time-intensive and requires integrating long-term thinking into near-term business decisions.

Need for Expertise and Tools

- Effective assessments require expertise in climate science, economics, and risk modelling, which many companies lack internally.
- Identifying appropriate benchmarks and tools to assess climate risks and opportunities can be overwhelming.

Integration with Corporate Strategy

- Climate risk assessments often require cross-functional collaboration, which can be difficult in large organizations.
- Companies may struggle to align transition risk assessments with broader corporate strategies, such as growth or cost optimization goals.

Careful planning and scoping allows for an efficient approach

There are a number of considerations that companies can take to ensure that their approach to climate risk management is efficient and brings in the most benefits.

Clear Scoping

- Define key questions and metrics based on company and industry needs (e.g., NZE-aligned building share for real estate or EBITDA impact for manufacturing).
- Start with a narrow scope to understand key drivers before scaling up. Focus on one business division to refine mechanics efficiently.
- Prepare a project memorandum to bring everybody on board, describing the scope and objectives.

Use Public Scenarios and Adjust Locally

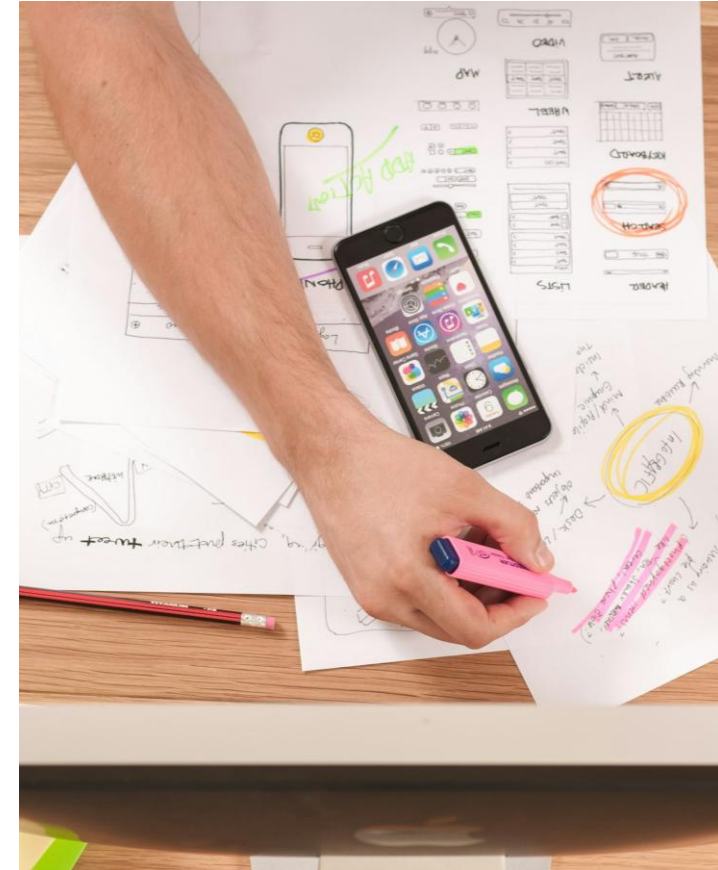
- Use public IEA Scenarios for general trends
- Global scenarios often lack the granularity required for localized risks.
- Incorporate company-specific data and avoid sole reliance on opaque commercial models.

Understand Risk Drivers

- Identify and document material risk drivers and their impact on performance.
- Engage key departments through workshops for diverse perspectives. Prioritize which drivers to quantify and plan reporting formats.
- Document narratives and describe inter-dependant relationships

Build In-House Expertise

- Work with third parties to build models tailored to your needs
- Develop internal skills to understand models and assumptions.
- Create capacity to build and maintain tools to ensure flexibility for future adjustments.



Concluding Remarks

Managing climate-related risks can be a critical internal tool for companies, shaping corporate strategy and guiding mitigation actions. These risks can arise from direct physical impacts on assets due to extreme weather events (Physical Risks) or from the broader transition to a low-carbon economy (Transition Risks).

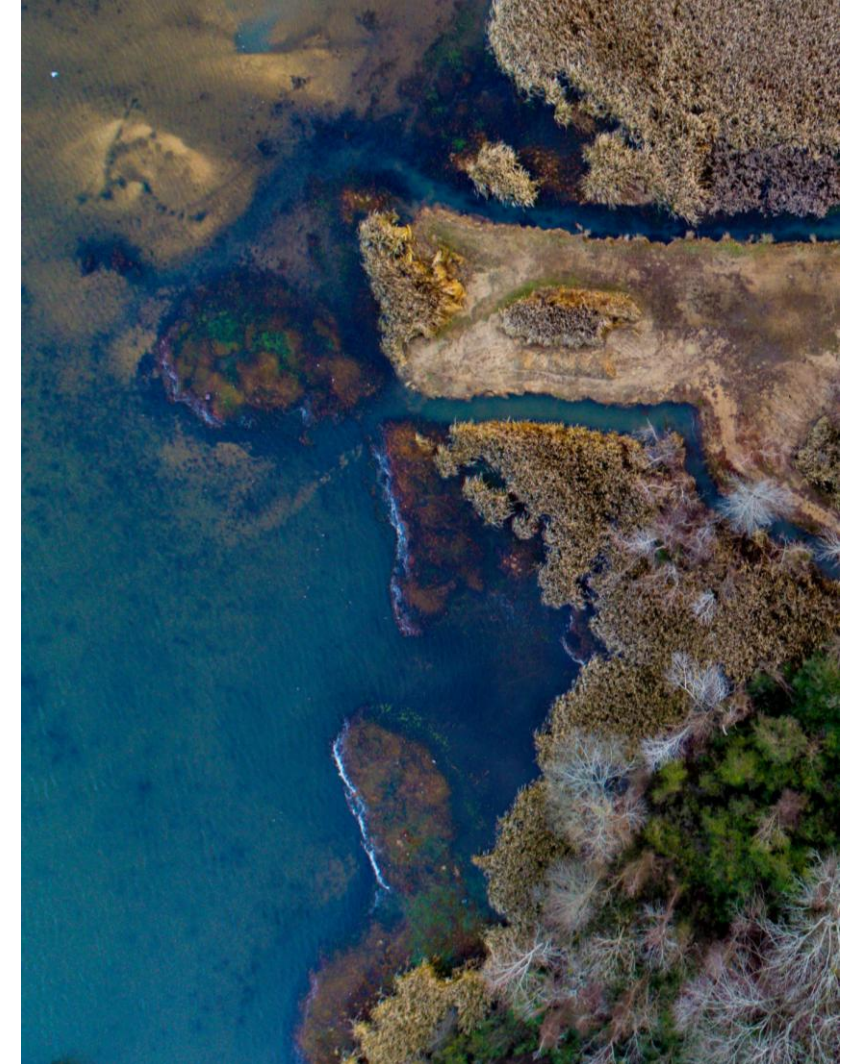
Achieving net-zero emissions by 2050 will require a fundamental transformation of the global energy system, including widespread deployment of clean energy technologies, electrification, and a significant reduction in coal, oil, and gas consumption.

This transition will have profound economic implications, affecting industries and corporate financial performance. For example, carbon pricing alone could impact fossil fuel utilities and energy-intensive sectors such as materials, metals, and chemicals—potentially reducing their EBITDA by up to 50% by 2030.

To assess these risks, companies often conduct Scenario Analysis—a risk management tool that evaluates the potential impact of different future scenarios on business performance. This assessment process consists of three key steps:

1. **Defining Scope & Boundaries** – Establishing the assessment framework, including the selection of scenarios. For transition risks, companies typically rely on scenarios from the International Energy Agency (IEA), which outline different pathways for the global energy system based on policy, technology, and societal developments.
2. **Identifying Key Transition Drivers** – Mapping company’s main transition drivers and assessing their impact on different business areas under each scenario.
3. **Modelling Financial & Operational Impact** – Integrating scenario assumptions into impact models, linking them with company-specific operational data (e.g., production, costs) to generate insights.

Before undertaking such an analysis, companies should ensure a well-defined scope, engage relevant stakeholders, document findings, and continuously build in-house expertise to enhance future assessments.



About Enfinit

- Enfinit is a Geneva-based advisory firm specializing in **energy** and **sustainability**.
- We work with project developers, investors and corporations in structuring their sustainable infrastructure investments and planning their decarbonisation activities.
- Our experience spans across various energy sectors (power generation, storage, energy efficiency, mobility).

We work with:



Utilities & Project Developers

We help energy players (utilities, IPPs, project developers) assess, structure and finance their energy infrastructure projects.



Corporations & SMEs

We support companies in identifying and quantifying climate-related risks and opportunities associated with the transition to a low-carbon economy.



Multilaterals & Policymakers

We work with Multilateral Financing Institutions (MFIs), policymakers, non-governmental organizations and foundations in various initiatives, capacity building and research assignments.

Our Scope of Services - Corporate Sustainability

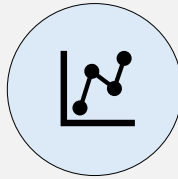
We support corporations and SMEs in advancing their **net-zero energy goals** through tailored sustainability strategies and comprehensive transition plans toward a low-carbon economy. We offer the following dedicated services along the sustainability value chain:

1. DIAGNOSTICS



- Assess **alignment** with CSRD/TCFD guidelines and **recommend** areas of improvement.
- **Benchmark** performance against industry peers on climate-related disclosures

2. ANALYTICS



- Identify key **transition risks & opportunities**, and growth areas
- Model financial impacts using **scenario analysis** to ensure resilience.

3. TRANSITION PLANNING



- Co-develop actionable **transition plans** with clear, ambitious targets and KPIs.
- Create **roadmaps** with defined roles and accountability for progress.

4. REPORTING



- Contribute to the drafting of the relevant disclosures (sustainability report/annual report)

5. CAPACITY BUILDING



- Develop **capacity building programmes** for Board of Directors (BoD), Executive and Middle Management and Policy Makers on climate science fundamentals, climate governance, current regulatory landscape, emerging market trends, scenario analysis and impact of climate-related risks and opportunities.

1. Diagnostics – ClimaScore Report

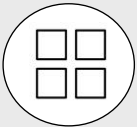
We review relevant reporting (Sustainability, Climate and/or Integrated Annual Report) with the objective of assessing how aligned they are with applicable reporting requirements.

How it helps companies:



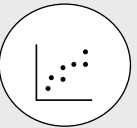
ClimaScore:

A single, reliable metric to anchor your performance on Climate Disclosures.



TCFD Breakdown:

Get individual scores for Governance, Strategy, Risk Management, and Metrics & Targets—plus granular breakdowns within each pillar.



Swiss Benchmarks:

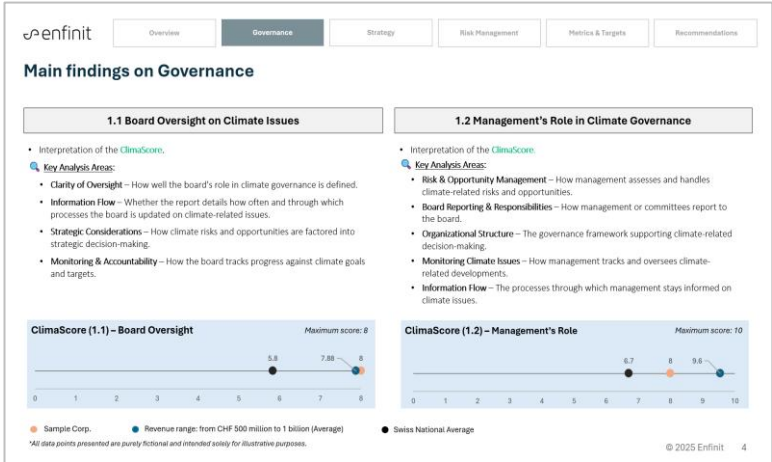
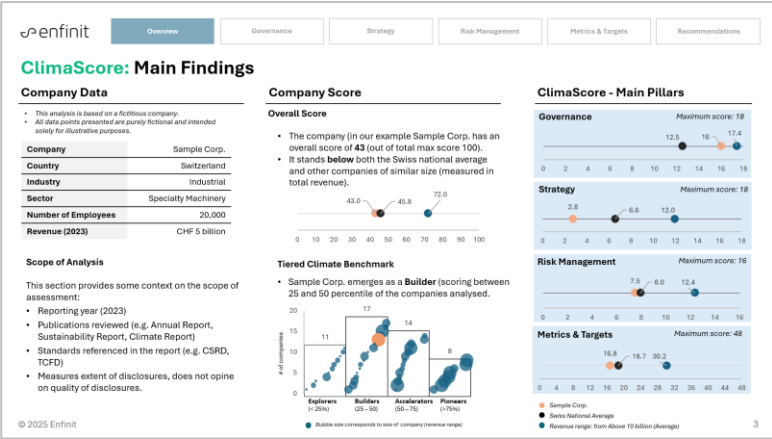
Compare to peers in your market (national average in Switzerland and companies of similar size)



Expert Guidance:

We highlight gaps and show exactly where to focus for maximum ESG impact.

Your Climate Disclosures, Measured and Compared.

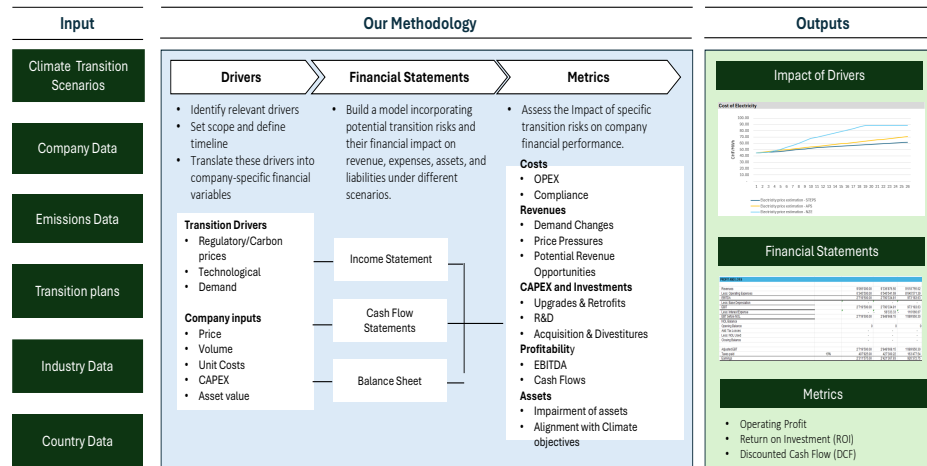


2. Analytics & Strategy Advisory

We work with companies in assessing impact of relevant transition risks, identifying opportunities and redefining their strategy

Identify Transition Drivers and Assess Impact

- We assist companies identify transition risks and assess potential impact on company performance.
- The output is a clear understanding of transition drivers and the financial impact on Balance Sheet and Income Statement.



Identify Opportunities

We help companies identify opportunities as they relate to:

New markets: market research on trends and market size, emerging consumer behaviour due to shift in preferences or changes in regulatory landscape.

Energy sources: assess potential for integrating sustainable energy sources in own operations (self generation, fleet, storage, procurement).

Product innovation: market research on competitor products as it relates to sustainability-related characteristics. Market research on competitor's products related to sustainability.

Resource efficiency: identify opportunities to optimise resource efficiency within own operations or in the supply chain.

Redefine Strategy

As a final step, we support companies in leveraging the results of the impact and opportunity assessment to shape their strategic direction.

We also assist in embedding this newly defined strategy across all levels of the organization, ensuring that risks are continuously monitored and evaluated throughout the decision-making process.

3. Transition Planning

- We help companies develop comprehensive Transition Plans that outline clear targets and concrete actions to support their shift toward a low-carbon economy. These plans are tailored to drive measurable reductions in GHG emissions, water usage, and waste generation, and are fully aligned with the company’s overall strategy—ensuring they are time-bound, quantified, and actionable.
- We present some of the key elements of a Transition Plan below.

Key elements of a Transition Plan

Baselines

Baselines serve as a starting point based on which the targeted outcomes will be modelled.

They are typically structured around GHG Emissions (Scope 1, 2 and 3) as well as other relevant metrics.

Targets

Tangible targets are set (short, mid and long term) in line with national plans.

Other targets related to water usage and waste generation are also set.

Action Plan

A detailed action plan is designed with actionable tasks, outlining the potential GHG reduction per activity.

Example: increasing energy efficiency in buildings.

The final output of the action plan will be a Transition Plan which will be visually presented into a timeline graph.

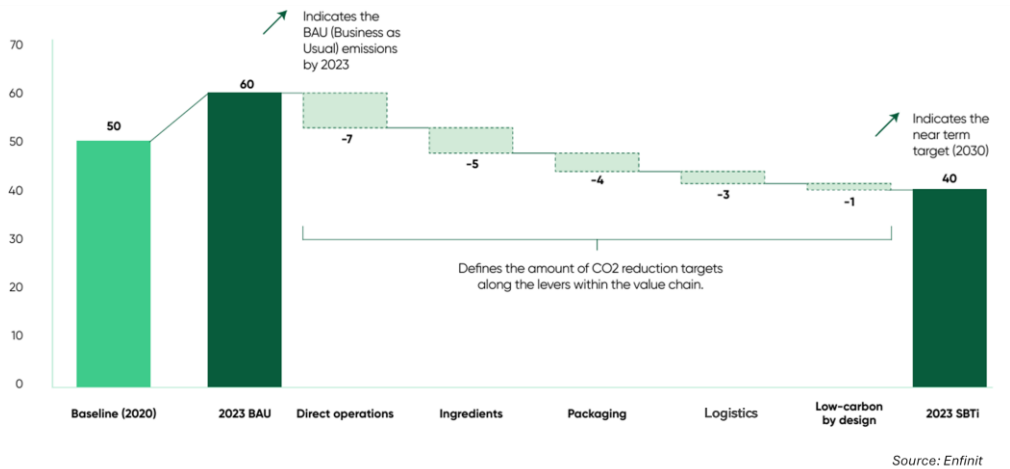
Roles & Responsibilities

Roles & responsibilities are assigned for the individual activities

Roles & responsibilities should be appropriately communicated within all levels.

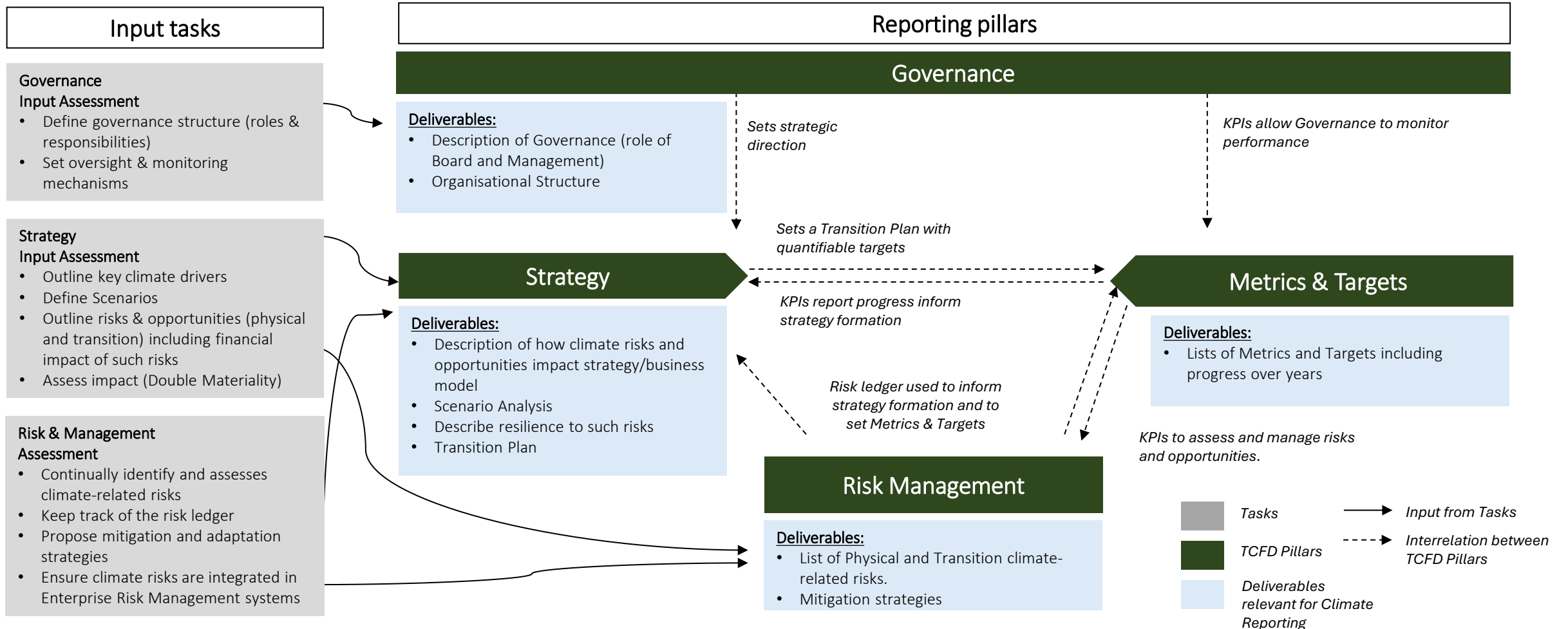
Example of levers to reach near-term targets (tons CO2)

The example below presents a waterfall chart that summarizes the baseline GHG emissions, the 2030 emissions reduction target, and the key levers contributing to achieving that target.



4. Disclosure / Reporting

- We support companies in synthesising relevant information and drafting disclosures for respective reporting requirements.
- The following is an example of key inputs, deliverables and interrelations between TCFD pillars relevant to non-financial or sustainability reporting.



5. Capacity Building

We offer off-the shelf and tailored **capacity building programmes** on climate-risk assessment and disclosures.

Program	Content	Format	Targeted Audience
High-level overview of Climate Reporting (1-2 hours)	• Introduction to the foundational concepts of climate science. • Overview of current and evolving climate-related regulations and reporting frameworks. • Insights into emerging market trends shaping climate strategies. • Integrating climate risk assessment into strategy development and resilience planning. • Exploring effective governance structures for climate action and accountability.	• In-person workshop • Online webinar	• Bord od Directors (BoD) • C-suite executives • Policy makers
Deep Dive Workshops (1-2 day modules)	Climate-Related Risk Assessment and Resilience • In-depth exploration of climate-related risks and resilience strategies. • Understanding double materiality and its connection to strategic resilience. • Utilizing scenario analysis to estimate and manage the financial impacts of climate risks and opportunities. • Developing robust climate-related risk management frameworks and models. Transition Planning • Key components of effective low-carbon transition planning: targets, levers, financing, action plans, and KPIs. • Crafting actionable transition plans with defined roles, responsibilities, monitoring systems, and KPIs. • Leveraging emerging technologies and innovative business models to drive corporate decarbonization.	• In-person workshop • Online webinar	• Executive management • Middle management • Sustainability professionals
Guidelines & Reports	• Informational Documentation • Implementation Guidelines • Publications/Thought Leadership Reports/White Papers • Blog posts	• Publications • Short videos	• Sustainability professionals • Policy makers

Our competitive advantages

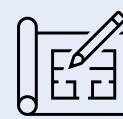
We distinguish ourselves in **two** Key Aspects:



At the Nexus of **Energy** and **Sustainability**

We blend energy market expertise with quantitative assessment to drive decarbonization.

Our solid understanding of energy **technologies and industrial efficiencies** enables us to craft tailored transition scenarios and translate them into financial metrics relevant for our Clients.



Empowering Clients to **Build In-House Expertise**

We go beyond traditional consulting by collaborating closely with organizations to strengthen their **internal capabilities**.

Our mission is to **equip clients with the necessary knowledge, skills, and tools** so they can thrive independently, ensuring resilience, adaptability and sustainable growth in an ever-evolving landscape.

Some of our trusted partners



Our Publications

Climate Reporting in Switzerland 2024



Download study [here](#)

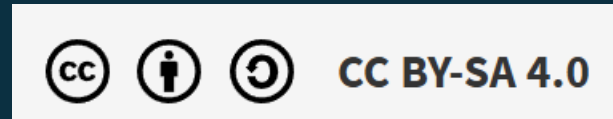
Climate Reporting in Switzerland 2023



Download study [here](#)

From Uncertainty to Strategy:

Tackling Climate Transition Risks Head-On



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